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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of)
Karabinis et al.)
Serial No. 09/261,209)
Filed: 3/3/99)
For: DUAL MODE SATELLITE/CELLULAR)
TERMINAL)
Attorney's Docket No. 4015-3028)

Hom, Shick C.
Examiner
Group Art Unit 2666

Raleigh, North Carolina

May 2, 2003

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Appeal Brief

The present appeal brief is filed in triplicate pursuant to 37 C.F.R. §1.192.

Enclosed is a check in the amount of \$320.00 as required under 37 C.F.R. §1.17(c). If any additional fees are due or required, Applicants request that this be considered a Petition therefore, and the Commissioner is hereby authorized to charge Deposit

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(1) REAL PARTY IN INTEREST

The real party in interest is Ericsson, Inc., Assignee of the present invention.

(2) RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences to the best of Applicants' knowledge.

(3) STATUS OF CLAIMS

A total of 58 claims have been presented for examination. Claims 1-46 were cancelled and claims 47-58 were added in a Preliminary Amendment dated March 3, 1999. The Examiner has finally rejected claims 47-58, and as such, Applicant appeals the rejection of claims 47-58.

(4) STATUS OF AMENDMENTS

All amendments have been entered to the best of Applicants' knowledge.

(5) SUMMARY OF INVENTION

Communications systems employ various modulation techniques to impress information on a carrier signal. For example, some systems use linear modulation techniques (e.g., OQPSK) because they minimize adjacent interference. Constant envelope modulation techniques (e.g., GMSK) are beneficial because they maximize the power amplifier efficiency of a transmitter, and as such, maximize transmit power levels. Conventional systems utilize the same type of modulation techniques on both the uplink and the downlink in a single uplink/downlink channel pair.

The present invention relates to a system and method of communicating signal bursts between two stations, for example a mobile terminal and a satellite relay station, which uses two different modulation techniques simultaneously on the same uplink/downlink channel pair. By way of example, a mobile terminal includes a receiver that is able to receive and process a linearly modulated signal burst transmitted by the satellite relay station over a downlink RF channel. The mobile terminal also includes a transmitter that transmits a constant envelope modulated signal burst to the satellite relay station over an uplink RF channel. Thus, the present invention communicates using both constant envelope modulated signal bursts and linearly modulated signal

bursts over a single transmit/receive channel pair (i.e., uplink/downlink). Using two different types of modulation techniques on the uplink/downlink channel pair permits the mobile terminal to experience minimized interference on the downlink (a benefit of using linear modulation), while also enjoying maximized transmit power levels on the uplink (a benefit of using constant envelope modulation).

(6) ISSUES

Whether claims 47-58 are obvious under 35 U.S.C. §103(a) over U.S. Patent No. 5,710,768 to Ziv et. al., (hereinafter “Ziv”) in view of U.S. Patent No. 5,774,788 to Hannah et. al. (hereinafter “Hannah”).

(7) GROUPING OF CLAIMS

All pending claims 47-58 stand or fall together.

(8) ARGUMENT

A. The Examiner has failed to make out a *prima facie* case of obviousness.

Claim 47 relates to a communication system that communicates signal bursts between a mobile telephone and a satellite relay station, and requires using two different modulation techniques over a single uplink/downlink channel pair. In particular, claim 47 recites a transmitter that transmits constant envelope modulated signal bursts over the uplink RF channel, and a receiver that receives linearly modulated signal bursts over the downlink RF channel. Thus, the system of claim 47 transmits and receives both constant envelope modulated signal bursts and linearly modulated signal bursts, respectively, over the same uplink/downlink channel pair.

Ziv, the primary reference cited by the Examiner, teaches a linear method of searching for a multipath signal subject to power control in a spread spectrum

communications system. An integrated search processor buffers received multipath signal samples and searches the samples to determine the best paths (i.e., those paths that demonstrate the least amount of interference). Ziv does disclose linear modulated signals received over the downlink, but never discloses constant envelope modulation, and never discloses using two different modulation techniques over a single uplink/downlink channel pair.

Hannah, the secondary reference, teaches a remote ground terminal having an indoor unit and an outdoor unit. The indoor unit generates a modulated data signal having an envelope of constant amplitude, and transmits the signal to the outdoor unit. The outdoor unit then produces a constant envelope modulated carrier signal for transmission to the satellite over the uplink. Hannah does disclose constant envelope modulation, but never discloses linear modulation, and never discloses using two different modulation techniques over a single uplink/downlink channel pair.

In rejecting claim 47, the Examiner has put forth a *legally insufficient* motivation to combine. In particular, the law governing §103 requires the Examiner to specifically point out the rationale behind the combination, and further, base the rationale on concrete evidence of record.

The examiner's conclusory statements that ...do not adequately address the issue of motivation to combine. This factual question of motivation is material to patentability, and could not be resolved on subjective belief and unknown authority...Thus, the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion.

In re Lee, 61 U.S.P.Q. 2d 1430,1434 (Fed. Cir. 2002) (emphasis added). Any reason, suggestion, or motivation that would lead a person of ordinary skill in the field of the invention to make the combination must come from the prior art, and not from

Applicants' invention itself. *In re Oetiker*, 977 F.2d 1443, 24 U.S.P.Q.2d 1443 (Fed. Cir. 1992).

Ziv and Hannah may teach linear modulation and constant envelope modulation, respectively, but neither reference even hints at using both modulation techniques on the same uplink/downlink channel pair. Despite this, the Examiner proffers:

It would have been obvious...to provide the step of transmitting constant envelope modulated signal bursts...over an uplink RF channel and said constant envelope modulated signal bursts being GMSK modulated signal as taught by Hannah et. al. to the system of Ziv et. al. because Hannah et. al. teach[es] the desirable advantage of providing an increase in operational efficiency, a reduction in overall size and a reduction in DC power consumption by the unit, which substantially lowers the cost of the unit and said lower cost of the unit being desirable to achieve more cost efficient system operation in Ziv et. al.

In other words, the Examiner believes that a teaching of "smaller, cheaper, more efficient" would lead one skilled in the art to combine the cited art and thus, realize Applicants' claimed invention. However, this motivation casts a very large net that encompasses many, many systems. Indeed, most if not all communications systems strive to achieve the goal of "smaller, cheaper, and more efficient." This does not mean that these systems use two different modulation techniques as recited in claim 47, nor does it mean that they realize the benefits of using different modulation schemes on a single channel pair. Simply reciting a desire to make a "smaller, cheaper, and more efficient" device does not lead one skilled in the art to appreciate the complexities involved in building a system that utilizes two different modulation techniques on the same uplink/downlink channel pair.

The proffered motivation is a generalized "blanket" statement that is nothing more than an attempt at disguising impermissible hindsight reconstruction. The only place that teaches using both linear modulation and constant envelope modulation on the same channel pair is Applicant's claim 47.

47. A communication system that communicates signal bursts between at least one mobile telephone and a satellite relay station comprising:
- a transmitter that transmits constant envelope modulated signal bursts from the mobile to the satellite relay station over an uplink RF channel; and
 - a receiver that receives linearly modulated signal bursts from the satellite relay station at the mobile telephone over a downlink RF channel.

This fact is evidenced by what the cited references do not teach or suggest alone or in combination. That is, neither reference teaches or suggests, alone or in combination, using two different modulation schemes on a single channel pair. The only document before this Board that contains this teaching is Applicants' own disclosure. Accordingly, the §103 rejection of claim 47 stands in stark contrast to the requirements of law, and as such, must be withdrawn.

Summary of Argument

The Examiner has failed to proffer a *legally sufficient* motivation to combine the references, and thus, has failed to establish a *prima facie* case of obviousness as required by law. This is reason enough to compel the Board to reverse the §103 rejections maintained by the Examiner.

Conclusion

For the reasons set forth above, all claims being appealed herein are patentable, and the rejections maintained by the Examiner must be reversed.

Respectfully submitted,

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(9) APPENDIX

Claims

47. A communication system that communicates signal bursts between at least one mobile telephone and a satellite relay station comprising:
- a transmitter that transmits constant envelope modulated signal bursts from the mobile to the satellite relay station over an uplink RF channel; and
- a receiver that receives linearly modulated signal bursts from the satellite relay station at the mobile telephone over a downlink RF channel.
48. The communication system of claim 47 wherein said constant envelope modulated signal is a Gaussian Minimum Shift Keyed (GMSK) modulated signal.
49. The communication system of claim 47 wherein said linearly modulated signal is an Offset Quadrature Phase Shift Keying (OQPSK) signal.
50. The communication system of claim 47 wherein said constant envelope modulated signal bursts and said linearly modulated signal bursts are TDMA signal bursts.
51. A method of communicating signal bursts between at least one mobile telephone and a satellite relay station comprising the steps of:
- transmitting constant envelope modulated signal bursts from the mobile to the satellite relay station over an uplink RF channel; and
- receiving linearly modulated signal bursts from the satellite relay station at the mobile telephone over a downlink RF channel.

52. The method of claim 51 wherein said constant envelope modulated signal is a Gaussian Minimum Shift Keyed (GMSK) modulated signal.
53. The method of claim 51 wherein said linearly modulated signal is an Offset Quadrature Phase Shift Keying (OQPSK) signal.
54. The method of claim 51 wherein said constant envelope modulated signal bursts and said linearly modulated signal bursts are TDMA signal bursts.
55. In a communication system that communicates signal bursts between at least one mobile telephone and a satellite relay station over uplink and downlink radio frequency (RF) channels, said mobile telephone comprising:
a transmitter for transmitting a constant envelope modulated signal to the satellite relay station over an uplink RF channel; and
a receiver for receiving a linearly modulated signal from the satellite relay station over a downlink RF channel.
56. The mobile telephone of claim 55 wherein said constant envelope modulated signal is a Gaussian Minimum Shift Keyed (GMSK) modulated signal.
57. The mobile telephone of claim 55 wherein said linearly modulated signal is an Offset Quadrature Phase Shift Keying (OQPSK) signal.
58. The mobile telephone of claim 55 wherein said constant envelope modulated signal bursts and said linearly modulated signal bursts are TDMA signal bursts.